

Zadatak 9. Kako glasi jednačba tangente povučene na parabolu $y = -x^2 + x + 3$ u njezinoj točki $T(-1, y)$?

Rješenje. $y = -x^2 + x + 3$, $T(-1, y)$;

$$y = -(-1)^2 + (-1) + 3 = -1 - 1 + 3 = 1 \implies T(-1, 1)$$

$$k = \lim_{\Delta x \rightarrow 0} \frac{f(x_0 + \Delta x) - f(x_0)}{\Delta x} = \lim_{\Delta x \rightarrow 0} \frac{1}{\Delta x} [-(-1 + \Delta x)^2 + (-1 + \Delta x) + 3 - 1]$$

$$= \lim_{\Delta x \rightarrow 0} \frac{1}{\Delta x} [-1 + 2\Delta x - \Delta x^2 - 1 + \Delta x + 2] = \lim_{\Delta x \rightarrow 0} (3 - \Delta x) = 3$$

$$y = kx + l \implies 1 = 3 \cdot (-1) + l \implies l = 4 \implies y = 3x + 4.$$